ENTOMOLOGICAL NEWS

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ENTOMOLOGICAL NEWS

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On Three New Eurymerodesmid Millipeds and Notes on Paresmus impurus (Wood)

By NELL B. CAUSEY, Fayetteville, Arkansas

From southern Missouri into Mississippi and westward into Texas and Oklahoma, eurymerodesmids, next after pseudopolydesmids, are the most abundant of the polydesmoid millipeds; while xystodesmids, which are so abundant in the Atlantic Coast states, are relatively rare. Unlike the pseudopolydesmids, in these states sympatric species of eurymerodesmids are not uncommon and species tend to be limited as to distribution, often to as few as five or six counties. The taxonomy is difficult, for there is considerable individual variation in some species in the two most used characters, the male gonopods and the marginal lobes of the gonopodal opening. The female vulvae, which also are of taxonomic importance in this group, have been neglected by taxonomists.

The type specimens will be deposited in the collection of the Academy of Natural Sciences of Philadelphia.

Family EURYMERODESMIDAE

Genus **EURYMERODESMUS** Brolemann 1900

Eurymerodesmus compressus, n. sp. Figs. 1–4

Gonopods distally flattened in the vertical plane as in *E. wellesleybentoni;* distinguished from that species by the small setose pyramids with black apices between the odd numbered legs, 11 through 25. Gonopodal opening widened disto-laterad as in *E. amplus* Causey 1952, but without the disto-lateral lobes

of that species. Easily distinguished from related species by the long sickle-shaped vulvae of the female.

Male holotype.—Dorsum mottled dark olive, with an uninterrupted black line; lateral margins of keels and cephalic margin and keels of collum orange; antennae and distal half of legs dark; venter and base of legs creamy. Caudal angles of keels 2 through 13 rounded to right, becoming increasingly acute 14 through 19.

Outer mandibular process larger than in most species. Coxae of first legs with small conical process on distal margin; processes of coxae of second legs larger than in other species. Sterna between legs 4 through 25 moderately setose and, except for the ninth, with a pair of tubercles, the tubercles larger and with black apices between the odd numbered legs. Sternum of ninth legs with deep V-shaped excavation, but with no raised lobes.

Gonopodal opening (fig.1) widened at the disto-lateral angles, with the distal margin closely adjacent to the spiracles and overhung by the sternum of the ninth legs; in *E. goodi* Causey 1952 the gonopodal opening is also overhung by the sternum. At about the middle of the lateral margin there is a medial, thickened strut; in lateral view this strut forms the apex of a triangular lobe, with the margin concave on both sides of the apex. Margin setose in front and laterad as far back as the struts; less setose inside the disto-lateral angles and across the distal margin and on the overhanging sternum. Laterad the pleurite above the opening is finely wrinkled as usual in a triangular area.

The gonopods (fig. 2) are curved and laterally compressed as in *E. wellesleybentoni* but are shorter and stouter. The ends turn slightly laterad and rest against the middle of the cephalic surface of the ninth coxae. The seminal canal passes along the inner curvature, but not so near the margin as in *E. wellesleybentoni,* and opens at the apex. There are the usual three rows of setae; the medial row, the only one indicated in fig. 2, consists of about 12 setae; the lateral row is longer, and the dorsal row is much longer and connects with the thickly setose prefemur.

Length 35 mm., *width* 6.2 mm.

Type locality.—ARKANSAS, Union Co., Junction City; 16 males, 2 females, October, 1950. Other collections in the same locality consist of 1 female May 10, 1950, and 11 males January 16, 1952, all collected by the Rev. H. M. Bevel; and 1 female May, 1950, at Three Creeks by Dr. Dwight Moore. *E. spectabilis* Causey 1950, a smaller species, occurs in the same general locality.

Female paratype.—Colors and pattern as in male; sterna without tubercles and almost glabrous; caudal angles of keels as in male.

Vulvae (figs. 3 and 4) conspicuously elongated and sickle-like, with the apices crossed *in situ*. The caudal valve (*c*) is acute and much longer than the smaller cephalic valve (*a*); the proximal cephalic surface of both valves are setose and wrinkled, but otherwise they are glabrous. The operculum (*o*) is small and setose, and the neckpiece (*n*), which forms a complete, scleritized ring, is greatly enlarged on the caudal surface.

Length 34 mm., *width* 5 mm.

Eurymerodesmus wellesleybentoni, n. sp. Fig. 5

A species similar in size and shape of gonopods to *E. angularis* Causey 1951; distinguished from it by differences in color pattern, in the details of the gonopodal opening, and the laterally compressed apex of the gonopods. In this last character it resembles the larger *E. compressus.*

Male holotype.—Dorsum mottled dark olive, with an uninterrupted black line; lateral margins of keels and cephalic margin and keels of collum orange; legs and antennae dark; venter creamy.

With the usual small processes on mandibles and coxae of second legs. Small setose lobes on sternites of fifth, sixth, seventh, ninth, eleventh, and thirteenth legs; sternites between remaining legs, except the last four, setose. Excavation between ninth legs deep and rectangular, about twice as wide as the lobes. Caudal angles of keels 15 through 19 acute.

Gonopodal opening with the usual anterio-medial constriction. Laterad the margins flare slightly, turn abruptly at the disto-lateral angles, and end abruptly at the lateral limit of the coxal openings. There is no formed margin along the caudal region of the opening. About the middle of the lateral margins is a small strut on the mesial surface. The margin is thickly setose anteriorly and laterad as far back as the struts; it is less setose on the mesial surface caudad of the struts and across the caudal surface. In lateral view the margin is horizontal, falling away perpendicularly at the coxal opening; it is finely wrinkled in a broadly triangular area with its apex on the segmental suture.

The apex of the gonopods is compressed laterally, so they appear much less robust in ventral view than as shown in figure 5, the mesial view. *In situ* they are subparallel, closely appressed to the ninth coxae, with the apices resting on the caudal surface of the coxae. The distal half is free of setae, which are in the usual lateral, dorsal, and mesial rows. The seminal canal passes along the inner curvature, very near the surface, and opens at the apex.

EXPLANATION OF FIGURES

Eurymerodesmus compressus, n. sp.

FIG. 1. Outline of gonopodal opening, ventral view; *m*, anterio-medial constriction; *p*, posterio-lateral angle; *s*, strut; *sp*, spiracle; *t*, sternum; *x*, coxa of ninth leg.

FIG. 2. Telopodite of left gonopod, mesial view; setae of lateral and dorsal rows omitted, mesial row indicated.

FIG. 3. Left vulva, cephalic view; *c*, caudal valve; *a*, cephalic valve; *n*, neckpiece; *o*, operculum.

FIG. 4. Same, caudal view.

Eurymerodesmus wellesleybentoni, n. sp.

FIG. 5. Telopodite of left gonopod, mesial view; setae of dorsal row and prefemur omitted.

Eurymerodesmus sanbernadiensis, n. sp.

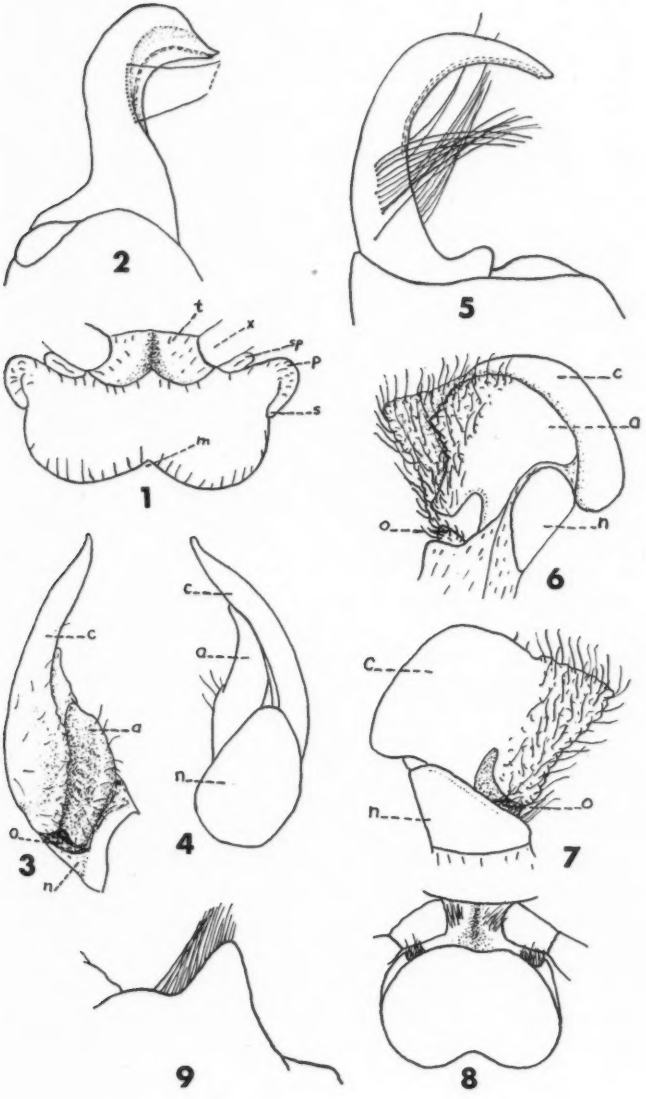
FIG. 6. Right vulva, cephalic view.

FIG. 7. Same, caudal view.

Paresmus impurus (Wood)

FIG. 8. Outline of gonopodal opening, ventral view.

FIG. 9. Marginal lobe, left, lateral view.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Width 3.9 mm.

Type locality.—ARKANSAS, Phillips, Co., Helena; one specimen collected in November, 1951, by Mr. Wellesley Benton, for whom the species is named.

Eurymerodesmus sanbernardiensis, n. sp. Figs. 6 and 7

A smaller species than *E. melacis* Chamberlin and Mulaik 1941, which also occurs in the Gulf Coast area of Texas. Distinguished from *melacis,* in which the valves of the female vulvae are equal and the operculum is exposed, by the unequal valves and the small, covered operculum. Distinguished from *compressus,* in which the valves are unequal and the caudal one is sickle-like, by the subquadrate caudal valve.

Female holotype.—Color not completely developed; dorsum mottled with orange and with an uninterrupted black line; keels orange laterad. Keels relatively small and dorsum highly arched. Sterna glabrous.

Vulvae (figs. 6 and 7) relatively larger than in typical eurymerodesmids. Both valves are wrinkled and setose along the mesial margins and glabrous otherwise. Both the large caudal valve (*c*) and the small cephalic valve (*a*) are irregularly lobate on the proximal mesial margin. The neck piece (*n*) is well developed, but is saddle-shaped, rather than forming a complete ring. The operculum (*o*) is small, setose, and covered by the lobes of the valves.

Length 18.5 mm., *width* 2.5 mm.

Type locality.—TEXAS, Fort Bend Co., banks of San Bernardo River, U. S. highway 59; one gravid female collected January 3, 1952.

Genus **PARESMUS** Brolemann 1900

Paresmus impurus (Wood). Figs. 8 and 9

Polydesmus impurus Wood 1867, Proc. Acad. Nat. Sci. Phila. (1867):47

The following is from Wood's description of the species:

The male appendages are robust, their blunt distant end is covered with long hairs, and gives origin to two spines, neither

of which is hairy; the larger of these is regularly curved, except at its extreme point, where it is abruptly bent; the other is slender, curved, and acute. The total length of the body and head is about an inch.

A vial in the collection of the Academy of Natural Sciences of Philadelphia is labelled: *Polydesmus impurus* Wood, No. 14210, Dr. Lincecum, probably type. It contains fragments, but no gonopods, of at least one male from which the following notes and the accompanying figures were made in 1950.

Mandibles and coxae of second legs with the usual processes. Sterna between legs 4 through 7 with a pair of tufts of setae; sterna behind gonopods setose and legs finely pubescent. Sternum between ninth legs with U-shaped excavation and setose lobes. Caudal angles of keels 12 through 19 acute.

Gonopodal opening with the usual anterio-medial constriction; caudad the opening is oval. Posterio-laterad the margin continues as triangular lobes (figs. 8, 9), which flare slightly and are about the same height as the lobes between the ninth legs. The caudal surface of the lobes is setose, but no other part of the gonopodal opening bears setae.

Width 3.6 mm.

Type locality.—TEXAS. The last home of the collector, Dr. Gideon Lincecum, was at Bonham, Washington Co., but he travelled so widely in Texas it is impossible to assign that safely as a specific locality to this species at this time.

The habitat, chiefly under old cow dung, is not unusual for millipeds. In an area that offers little else for cover, several millipeds, perhaps two or three species, may be found under one piece of dung.

Key to Species of *Paresmus* Based on Adult Males

1 (2) Subterminal tooth on concave dorsal surface of telopodite; triangular lobes on posterio-lateral margins of gonopodal opening.....*P. pulaski* Causey 1950
2 (1) Dorsal surface of telopodite convex and without subterminal tooth 3
3 (8) Telopodite of almost uniform width beyond broad prefemur 4

4 (7) Apex of telopodite bifid, one branch blunt and the other acute 5
5 (6) Marginal lobes horizontal and lateral.....
.....*P. paroicus* Chamberlin 1940.
6 (5) Marginal lobes triangular and posterio-lateral.....
.....*P. impurus* (Wood 1867)
7 (4) Apex of telopodite simple..*P. polkiensis* Causey 1952.
8 (3) Telopodite decreases gradually from broad prefemur to simple, acute apex; longitudinal ridge on dorsal surface; marginal lobes triangular and lateral.....
.....*P. columbus* Causey 1950.

Notice

The Pacific Science Board of the National Research Council announces that the results of its Entomological Survey of Micronesia are to be published by the Bishop Museum, Honolulu in a series entitled "Insects of Micronesia." All groups of insects, and also other terrestrial arthropods, will be included, as far as specialists are available and willing to cooperate in the program. The reports will be published as individual papers, as received, and not in systematic order. The principal basis for the study will be the collections made during the past few years under the auspices of the Board. The field work will be completed during 1952, and much of the material is already mounted and is being sorted for distribution to specialists. Other collections from Micronesia will also be utilized. The project is being organized by Dr. J. Linsley Gressitt, with headquarters at the Bishop Museum, Honolulu 17, T. H. He will be glad to receive offers from specialists to study particular groups, and information about additional collections from Micronesia. The Chicago Natural History Museum, the California Academy of Sciences and the Museum of Comparative Zoology have cooperated in the processing of the Pacific Science Board collections.

A New Species of Xenorhipis from Texas (Coleoptera: Buprestidae)

By Josef N. Knull, Department of Zoology and Entomology, The Ohio State University

Xenorhipis hidalgoensis n. sp.

♀.—Moderately elongate, robust; head and dorsal surface brilliant metallic green; scutellum, area along suture back of scutellum and a patch back of middle along lateral margin of each elytron dark blue. Exposed dorsal segments of abdomen, posterior coxae, meso- and metaepisternum brilliant metallic green. Abdomen and rest of ventral surface dark blue, pubescence of entire insect not conspicuous.

Head deeply depressed between eyes near occiput; surface reticulate, becoming granulose on vertex; antennae extending to near hind angles of pronotum when laid along side, serrate from the fourth segment, third segment longer than second.

Pronotum wider than long, wider at apex than at base; sides rounded in front, then obliquely converging to base; lateral margin inferior in front; anterior margin sinuate, median lobe broad; basal margin truncate; disk somewhat flattened, a small depression each side in front of middle and at base; surface finely reticulate. Scutellum oval, granulose.

Elytra wider than base of pronotum; sides subparallel near base, constricted in front of middle, then subparallel to separately well rounded apices which are not serrate; disk somewhat flattened, a basal depression near outer angle on each elytron; surface coarsely granulate all but umbone.

Abdomen beneath coarsely granulate, pubescence short. Prosternum not lobed, margin truncate.

Length 5.3 mm.; width 1.8 mm.

♂.—Narrow elongate; head and pronotum bronze, elytra with a bronzy reflection, with exception of a metallic blue area along base of elytron and extending along sutural margin, an oblique light line extending from basal depression to middle then turned toward lateral margin. Beneath more brilliant bronze. Antennae pectinate. A large sensory pit on side of metasternum.

Length 5.5 mm.; width 1.6 mm.

Holotype ♀ and *allotype* collected in Hidalgo Co., TEXAS, March 20, 1952, by D. J. & J. N. Knull. *Paratypes* from same locality, March 18–27, 1952, and April 7, 1950, with same collector data. Type material in collection of author.

This species is closely related to *X. brendeli* Lec. The females can be separated by the entire apices of elytra and the color pattern. The males and females are similarly marked in *brendeli*. The brassy dorsal surface of the males in *hidalgoensis* as well as more finely serrulate apices of elytra will separate them.

Notes on Calendridae (Coleoptera)

By DAVID MCCOMB and G. F. KNOWLTON. Logan, Utah

Material belonging in this small family gradually has accumulated in the Utah State Agricultural College insect collection. Following a preliminary study, most of the material recorded below was checked by Miss Patricia Vaurie.

Calendra aequalis ochrea Lec. Midvale, Utah, Aug. 7, 1937 (G. F. Knowlton); Logan, Utah, July 23, 1926 (F. Clarke), July 21, 1947 (S. E. Harrison), Aug. 14, 1947 (R. L. Rigby); Mona, Utah, June 5, 1941 (Knowlton—F. C. Harmston); Bear River Bird Refuge, Utah, May 5, 1941 (C. Bruce); Jordan Narrows, Utah, June 13, 1935 (R. C. Roskelley); Provo, Utah, May 1926 (C. Brown).

C. australis australis Chitt. Logan, Utah, June 15, 1932 (B. G. Whitaker); Hurricane, Utah, June 10, 1941 (Knowlton); Corinne, Utah, June 17, 1930 (Knowlton).

C. cicatristriata Fahr. Logan, Utah, June 11, 1931 (Knowlton), Aug. 27, 1947 (B. H. Popov); Riverdale, Idaho, Sept. 16, 1934 (C. F. Smith).

C. gentilis Lec. Farmington, Utah, June 19, 1937 (D. E. Hardy).

C. graminis Lec. Logan, Utah, July 3, 1946 (M. Nielson).

C. mormon Chitt. Logan, Utah, May 16, 1949 (W. W. Bryant); Gilroy, California, June 15, 1942 (D. F. Zamzow);

Stansbury Island, Utah, June 13, 1913 (Titus); Ephraim, Utah, July 6, 1904 (Titus); Moab, Utah, June 1, 1931 (Knowlton).

C. robusta Horn. Provo, Utah, May 1938 (R. Rigby).

C. simplex Lec. Logan, Utah.

C. ulkei Horn. Brigham, Utah, July 17, 1948 (Hardy).

Scyphoporus acupunctatus Gyll. El Paso, Texas, June 20, 1942 (T. O. Thatcher); Sabino Basin, St. Catalina Mtns., Arizona, Aug. 20, 1916 (Clark).

Sitophilus granarius L. Beaver, Utah, June 11, 1943 (Knowlton—P. E. Telford); Huntington, Utah, August 27, 1934, on wheat (Knowlton); Roosevelt, Utah, April 20, 1940, on sweet corn seed (Knowlton); Delta, Utah, Sept. 3, 1932 (Knowlton); Logan, Utah, Oct. 24, 1940 (D. Maughan).

S. oryzae L. On rice at Mauii, Hawaii, April 1, 1946 (C. J. Davis).

Rhodobaenus 13-punctatus Ill. Logan, Utah, Sept. 5, 1948 (W. H. Hanson), May 24, 1948 (B. A. Haws), June 2, 1948 (E. J. Taylor), July 20, 1934 (Thatcher); Beaver Dam, Utah, July 7, 1949 (A. C. Valcarce); Moab, Utah, Aug. 25, 1935 (Knowlton); Ogden, Utah, May 8, 1941 (D. R. Maddock), June 14, 1941 (W. D. Fronk); Smithfield, Utah, July 7, 1937 (Harmston); Petersboro, Utah, June 4, 1938 (Knowlton—Hardy); Plain City, Utah, June 8, 1938 (Knowlton—Hardy); Marysvale, Utah, June 3, 1941 (Knowlton—Harmston).

Unusual Abundance of Lacebugs in New Jersey During Summer of 1951

Ever since the summer of 1946 lacebug populations have been building up in New Jersey on various host plants, culminating during the summer of 1951 in one of the worst infestations that have been noted for years. These infestations were so general over all portions of the state wherever host plants grew that locality records are unnecessary. The azalea lacebug, *Stephanitis pyrioides* Scott, introduced many years ago from Japan, was present in unusual numbers all over central and northern New Jersey in nearly every locality where established plants were

growing. The rhododendron lacebug, *Stephanitis rhododendri* Horv., was likewise abundant on rhododendrons in the same area.

More noticeable than any other species was *Corythucha ciliata* Say, on American buttonwood and European plane. Numerous American buttonwoods as high as fifty feet had every leaf whitened by the feeding of millions of adults and nymphs and anyone standing beneath such trees was soon covered by hundreds of insects. On *Crataegus tomentosa, Corythucha cydoniae* Fitch was unusually plentiful in the central area of New Jersey, occurring also on shadbush.

Mr. Robert J. Sim observed heavy and conspicuous infestations of *Corythucha arcuata* Say on chestnut oak in the Pine Barrens and on white oak in various other areas; *Corythucha pergandei* Heid., generally prevalent on alder; *Corythucha associata* O. & D., common on wild cherry; *Corythucha ulmi* O. & D., in large numbers on American elm at Adelphia in Monmouth County, N. J., this species not having been recorded previously from New Jersey; *Corythucha juglandis* Fitch, plentiful on walnut; *Corythucha celtidis* O. & D., occasionally on hackberry; *Gargaphia tiliae* Walsh, moderate on linden; the eggplant lacebug, *Gargaphia solani* Heid., general and conspicuous on eggplant and horse nettle in the southern part of New Jersey.

It is difficult to account for the unusual abundance of these insects. As exposed feeders they are subject to the attacks of predacious enemies. Years ago I paid close attention to lacebugs, but I do not recall them as having many parasitic enemies. However, according to the U. S. Weather Bureau, the winters of New Jersey since that of 1945–46 have been milder than normal except that of 1947–48 which was a little colder than normal. The winter of 1948–49 was much milder than usual. Most of the species overwinter in the adult stage and a succession of mild winters may have reduced the mortality among overwintering adults so that unusually large numbers were available for feeding and breeding each spring. This may account for the gradual increase in the population every summer culminating in the extremely heavy population of the summer of 1951. During severe and changeable winters the mortality among overwintering adults is considerable.

H. B. Weiss

Pyrota riherdi, a New Species of Meloidae (Coleoptera), from South Texas

By Lawrence S. Dillon, Department of Biology,
A. & M. College of Texas

Among a miscellaneous collection of beetles from south Texas received for identification was the very interesting unique specimen described below. The author wishes to express his thanks to Mr. Paul T. Riherd, who collected the fine beetle.

Pyrota riherdi n. sp.

Pale stramineous, the elytra paler, nearly cream-colored; pronotum with a small, round, dark macula each side of middle of disk and a slightly larger, irregular, similar one on extreme side margin above procoxal cavity. Elytra each with two distinct, sharply defined, fuscous vittae, outer one extending from humerus to near apex, the inner one remote from suture, abbreviated, reaching from behind scutellum to middle of elytron, each scarcely one-third as wide as the space between them. Body beneath stramineous, with black markings as follows: mesepisterna with a triangular macula; metasternum at each outer anterior angle with a small macula, metepisterna with a narrow vitta; and first three abdominal sternites broadly black. Apices of femora and of tibiae, and entire tarsi, clouded with fuscous. Antennae fuscous, except the scape, which is dusky.

Head one-sixth wider than long, above arcuate to eyes, finely punctulate and densely, coarsely punctate over entire surface; eyes large, distinctly longer than interocular width, slightly broader than supraocular space. Pronotum one-third longer than wide, sides nearly straight basally, subparallel, very feebly widened to before middle, thence arcuately narrowed to apex, entire surface coarsely punctate (as well as sparsely, finely punctulate), the punctures sparse anteriorly but quite dense on basal half, especially so directly behind the dark discal maculae; basal discal impression small but deep. Elytra having a smooth appearance, not at all rugulose, minutely, densely alutaceous and

finely, evenly punctate except on the very feebly elevated costae. Metatibial spurs rather broad, concave, the outer one just twice as broad as inner. Antennae slightly surpassing elytral base, robust, very feebly tapering from fifth segment to apex; scape reaching slightly beyond middle of eye, slightly arcuate; second segment one-third as long as first; third nearly twice as long as second; fourth to eighth segments each half as long as first; ninth and tenth slightly shorter; eleventh a little longer than third.

Length 12 mm.

Holotype female (?): Edinburg, TEXAS, September 17, 1951, sweeping Rhodes grass (P. T. Riherd) [A. & M. College of Texas].

Remarks: Superficially this species resembles *P. bilineata* Horn, but is amply distinct from it in possessing four maculae on pronotum, having the elytral vittae very fine, the inner one abbreviated, and in its paler elytral coloration. Moreover, the head and pronotum are coarsely, densely punctate, the eye is distinctly longer than the interocular width, the elytra are not at all rugose but are uniformly, finely, and smoothly punctate, and the inner metatibial spur is much broader, being one-half as wide as the outer instead of one-fourth as in *bilineata*.

Correction

The ENTOMOLOGICAL NEWS of February, 1952, page 45 carried the statement, "At the California Academy of Sciences, the small vial consists of an open glass tube . . . ." Dr. E. S. Ross called my attention to the fact that the collection, "consists of shell vials, open at one end, 80 mm. in length and of several diameters. These are cotton-plugged and stored in an inverted position in the jar filled with alcohol. A partition plug of cotton protects delicate or small specimens from contact with the labels." The misstatement was a misinterpretation of notes and sketches by the author.

VINCENT D. ROTH

Current Entomological Literature

COMPILED BY R. G. SCHMIEDER AND J. W. H. REHN

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the year 1952 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

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Reviews

THE INTEGUMENT OF ARTHROPODS. The chemical components and their properties, the anatomy and development, and the permeability. By A. Glenn Richards. University of Minnesota Press, Minneapolis, 1952. Pp. xvi + 441, 65 figs. $6.00.

The title of this book tells what it is about. The average entomologist, however, even though he faithfully looks at the abstracting journals and at entomological periodicals and has some idea of what has been going on, will yet be amazed, upon paging through this book, at the gerat amount of detailed information that is covered and the diversity of the approaches to the study of the cuticle and the epidermis of arthropods that are represented. Professor Richards has reviewed critically and compared the tremendous literature that has accumulated (his bibliography has 1800 references), and he has shown skill and good judgment in sifting out basic information. The result is a balanced presentation organized under three sections dealing respectively with chemical and physical properties, anatomy and development, and with permeability. The further subdivision of the material into 31 chapters has also been very successful and this arrangement, together with the good index (14 pages), makes the book very convenient for reference use.

Although the book is written by a physiologist, there are quite a few anatomical illustrations and this fact points up a change that has come about in physiology. Twenty-five years ago, physiologists would hardly look at their actual material and attended mainly to their instruments and wrote papers illustrated by curves (often described by them as "beautiful") bearing dots of various shapes. Nowadays, even in the general physiology section of scientific meetings one sees many pictures presented, mainly micrographs, ordinary, phase and electron; truly physiology and morphology have re-married!

Professor Richards introduces two new terms: "procuticle," for the inner portion of the cuticle, i.e., the part beneath the epicuticle and which is often divisible into exocuticle and endocuticle; and "tectocuticle" for the cement-layer of Wigglesworth. It may be long before such new terms come into general use, for entomologists, reared on "priority" are loath to accept the new; after about twenty years of use of the term "epidermis" in the better treatises and texts, some recent text-books still adhere to "hypodermis" for the cellular layer of the integument.

One gets the overall impression that the subject of the integument is indeed a very complex one with many ramifications so that little space is allotted to any one topic, and often one would like a far more complete account of the particular subject of a chapter than is given. However, with the help of the fine bibliography, the reader can pursue his own particular interests in detail for he will have been well oriented in the entire field.—R. G. SCHMIEDER.

THE APHID GENUS PERIPHYLLUS. A systematic, biological, and ecological study. By E. O. Essig and Frieda Abernathy. University of California Press, Berkeley and Los Angeles, 1952. Pp. ix + 166, 43 figs. Price $3.00.

The aphids of this genus are maple-infesting, and ten species are described and illustrated in as many chapters. Most amazing are the life histories and the polymorphic forms of which Professor Essig himself says that he "never suspected that any species could possibly have as many distinct kinds of individuals as were found to occur. . . ." Actually there were two forms of males and 15 distinct forms of females, a total of 17 forms. Included are the peculiar "dimorphs" or minute 1st instar young from the fundatrigeniae that remain on the leaves without growing from April or May until the fall when they suddenly begin to grow, molt twice and mature in a few days to give rise to the sexual forms that produce the winter eggs. Of three of the ten species the life-cycles and the forms were worked out in complete detail, a labor that required six years of intensive effort. This is indeed an important contribution to the biology of aphids. —R. G. SCHMIEDER.

DIE SCHMETTERLINGE MITTELEUROPAS. By Walter Forster and Theodor A. Wohlfahrt. Band I/II, Lfg. 1 Bd. 1, pp. 1–32, Bd. 2, pp. 1–32, 4 pls. Franckh'sche Verlagshandlung, W. Keller & Co., Stuttgart, Germany.

This is the first "Lieferung" and contains 64 pages, parts of both volumes. Volume 1 is to include methods, ecology, genetics, systematics and nomenclature, distribution, etc.; volume 2 the systematic treatment of the diurnal Lepidoptera and 30 plates with 3000 figures (all in 4 to 5 colors) from water colors by Dr. Wohlfahrt of actual individual specimens. Price, DM. 10.— per Lieferung for the six Lfgs., and DM. 4.— for the linen

backs for binding. When published complete, DM. 76.—, bound. The entire work will appear during 1952 and 1953.

It is planned to publish also Volumes III (Sphing. and Bombyc.), IV (Noctuidae), and V (Geometr.), each with 30 plates, during 1954, '56, and '58 respectively.

This is the first new work on central European butterflies to appear in 40 years so that it presents a more modern treatment and will be valuable also for the fine colored figures, each one made from a single actual specimen before the artist.—R. G. SCHMIEDER.

UNDERSTANDING HEREDITY. An introduction to genetics. By Richard B. Goldschmidt. John Wiley and Sons, Inc., New York, 1952. Pp. ix + 228. Price $3.75.

Professor Goldschmidt, one of our foremost geneticists, has here given us an elementary book from which the fundamental facts and theories of genetics may be learned. Although essentially a book for laymen and for workers in fields where some understanding of genetics is desirable rather than for use as a college text, it does employ the standard terminology or vocabulary of genetics.

It is a fine thing to have an elementary and more or less popular account written by an outstanding scientist in the field. Such a man, even when he has to simplify certain of the materials will always be sensitive to his responsibilities and will never over-simplify to the extent of falsification as is sometimes done in popular books. Dr. Goldschmidt warns his readers when he is simplifying or abridging his account and his presentation remains true in essence, and is never misleading.—R. G. SCHMIEDER.

FIELD CROP INSECTS. By F. A. Fenton. Macmillan Co., New York, 1952. Pp. ix + 405.

This book begins with an elementary account of insect distribution and abundance, then gives a very brief introduction to the biology of insects followed by a rather full practical treatment of insecticides and some consideration of other methods of control. The remaining 60% of the volume takes up selected types of insects and their control, grouped into chapters based on feeding habits of the insects and the parts of plants attacked, such as leaf and plant destroyers (chewing), sucking, fruit, soil, and boring insects. The book has a good appearance and its language is straightforward and very clear.—R. G. SCHMIEDER.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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